## 1970 ARTICLE INDEX

A subject listing of articles published in MODERN MACHINE SHOP during the past year.

ALLOYS
Use The Right Alloy SteelFeb., 105
Less Tool Wear With CMC Stainless
Hold It! with Low-Melting-Point Alloys Mar., 114
Machining Titanium Alloys
Tap And Tool Life Increased With Stainless Steel
Teamwork Builds A Better Air Conditioner Oct., 139
SM Stainless Steel Saves Machining Time
Warm-Heading Wear Problem Solved
ASSEMBLING
It Takes \$10 Million To Produce Reactor Parts Feb., 112
How To Weld Light-Gauge Metals Mar., 120
Ultrasonic Assembly June, 152
Parts and Orders Where Are They? Nov., 79
Simplified Stud Driver Dec., 92
BORING
Spade Drilling Big HolesJan., 103
It Takes \$10 Million To Produce Reactor Parts Feb., 113
Less Tool Wear With CMC StainlessFeb., 125
A 1200 Percent Increase In Tool Life Feb., 132
Special Center Heads Stimulate Actuator Production Mar., 12
NC Machining Center Is 8 Machines In One Apr., 142
One Machine Does Work Of Four Apr., 146
A Hole Is More Than A Dimension
Adapter Doubles Production
Readout Doubles The FunctionsJune, 110
What's New In Steady Rests At Oak RidgeJune, 130
Flexible Automation
Add Carbides To Your PayrollJuly, 114
Roller Burnishing Eliminates Secondary Operation
Take A Look At The Latest Tools For Modern Metalworking Sept., 98 Where Have The Handwheels Gone?
and the same of th
Building-Block Special Machine Reduces Boring CostsOct., 134 Machining Time Reduced 40 PercentNov., 108
Hand Gages Speed Inspection
Milling Machine Has Simultaneous Five-Axis Contouring CapabilityDec., 78
Willing Machine has Simultaneous Five-Axis Contouring Capability Dec.,
BROACHING
Broaching Is For More Than Autos Feb., 82
Keyway Broaching Cuts Job Shop Costs Apr., 14:
Aerospace Parts Cutting On A Low Budget May, 14

## 1970 ARTICLE INDEX

A subject listing of articles published in MODERN MACHINE SHOP during the past year.

ALLOYS
Use The Right Alloy Steel Feb., 105
Less Tool Wear With CMC Stainless
Hold It! with Low-Melting-Point Alloys Mar., 114
Machining Titanium Alloys
Tap And Tool Life Increased With Stainless Steel
Teamwork Builds A Better Air Conditioner Oct., 139
SM Stainless Steel Saves Machining Time
Warm-Heading Wear Problem Solved
ASSEMBLING
It Takes \$10 Million To Produce Reactor Parts Feb., 112
How To Weld Light-Gauge Metals Mar., 120
Ultrasonic Assembly June, 152
Parts and Orders Where Are They? Nov., 79
Simplified Stud Driver Dec., 92
BORING
Spade Drilling Big HolesJan., 103
It Takes \$10 Million To Produce Reactor Parts Feb., 113
Less Tool Wear With CMC StainlessFeb., 125
A 1200 Percent Increase In Tool Life Feb., 132
Special Center Heads Stimulate Actuator Production Mar., 12
NC Machining Center Is 8 Machines In One Apr., 142
One Machine Does Work Of Four Apr., 146
A Hole Is More Than A Dimension
Adapter Doubles Production
Readout Doubles The FunctionsJune, 110
What's New In Steady Rests At Oak RidgeJune, 130
Flexible Automation
Add Carbides To Your PayrollJuly, 114
Roller Burnishing Eliminates Secondary Operation
Take A Look At The Latest Tools For Modern Metalworking Sept., 98 Where Have The Handwheels Gone?
and the same of th
Building-Block Special Machine Reduces Boring CostsOct., 134 Machining Time Reduced 40 PercentNov., 108
Hand Gages Speed Inspection
Milling Machine Has Simultaneous Five-Axis Contouring CapabilityDec., 78
Willing Machine has Simultaneous Five-Axis Contouring Capability Dec.,
BROACHING
Broaching Is For More Than Autos Feb., 82
Keyway Broaching Cuts Job Shop Costs Apr., 14:
Aerospace Parts Cutting On A Low Budget May, 14

BURNISHING	
Finishing Time Cut In Half Jan.,	118
Finishing And Threading 1018 Plague You?, Apr,,	116
Roller Burnishing Eliminates Secondary Operation	127
Roller Burnishing Improves The Finish	85
the express Makes Charles Contants Wards	
CARBIDE TOOLING	
Less Tool Wear With CMC Stainless Feb.,	125
Machinable Carbide Cuts Production Cost	122
Add Carbides To Your Payroll	114
Machining Titanium Alloys	139
Add Carbides To Your PayrollJune,	116
Add Carbides To Your PayrollJuly,	114
Add Carbides To Your Payroll Aug.,	
Take A Look At The Latest Tools For Modern Metalworking Sept.,	123
Add Carbides To Your PayrollOct.,	112
Conventional Machining Is Alive And WellOct.,	130
Add Carbides To Your Payroll	96
Add Carbides To Your PayrollDec.,	56
Titanium Carbide Increases Tool Life Dec.,	88
To the feet the free graph and have been defined the feet were and	
CERAMIC TOOLING	
Add Carbides To Your Payroll Dec.,	56
CHUCKERS	
Take A Look At The Latest Tools For Modern Metalworking Sept.,	93
Take A Look At The Latest Tools For Modern Metalworking Sept.,	
Take A Look At The Latest Tools For Modern Metalworking Sept.,	
Take A Look At The Latest Tools For Modern Metalworking Sept.,	126
CLAMPING/HOLDING	
Threaded Work Held With Nut Jan.,	127
Multiple Shaft MachiningJan.,	128
Clamp Supports Save Time	130
Welding Frame Reduces Clamping Operations Feb.,	138
Hold It! with Low-Melting-Point Alloys	
Multiple Work Holding Grinding Fixture Apr.,	158
Shaper And Grinder Fixture	159
Fast Tapping	144
Clamp For Machining Metal BallsJune,	148
Efficient Clamping FixtureJune,	149
Versatile Expanding ArborJuly,	139
Power Clamping Components Increase Production Aug.,	122
Simple Locking Principle Has Many Uses Aug.,	129
Adjustable Table SupportNov.,	117
Hexagon Sleeve Made In The Shop Dec.,	91

COOLANTE		
COOLANTS Central Filtration For Precision Grinding	Mar	110
Rotary Carrier Grinder Solves Problem	-	124
Machining Titanium Alloys		139
Coolant Feeding Drills Reduce Costs		154
New Nozzle Makes Grinding Coolants Work		100
How One Screw Machine Shop Achieved Mist-Free Air		116
Roller Burnishing Improves The Finish		84
Cutting Oil Increases Production And Tool Life		112
New Abrasive Masters Tool Steel		61
The wind in the state of the st	Beer,	0.
DIE DESIGN		
One Tape-Controlled Die Punches 38 Different Parts	Jan.	82
Pressbrake Dies From Round Bars		137
Machinable Carbide Cuts Production Cost		122
Fluidics Used To Protect Dies		150
Notching Die For Angle Iron		159
Die Bends Two Parts Per Stroke		158
Will Your Forming Die Work?	•	78
Have You Tried Cryogenics?		91
2,000-Ton NC Forging Facility Speeds Ingot Conversion.		81
Optimum ProgressiveDie Design With Aid Of Computer.	•	82
Die Making Operations Go NC		85
Warm-Heading Wear Problem Solved		87
		٠.
DRILLING		
Evolving The Right NC Computer Programming	Jan	92
Spade Drilling Big Holes		103
Small-Plant Equipment Modernization		107
Custom-Built Parts For Safer Racers	Feb.,	102
It Takes \$10 Million To Produce Reactor Parts	Feb.,	112
Multiple-Spindle Drilling On Lathe	Feb.,	136
Hold It! With Low-Melting-Point Alloys	Mar.,	114
Right-Angle Driver Speeds Chuck Adjustments	Mar.,	132
The M-40's Tough But Grindable		122
NC Machining Center Is 8 Machines In One		142
Six-Station Dial Machine		154
Portable Drill Aids Maintenance		158
Coolant Feeding Drills Reduce Costs		154
Adapter Doubles Production		156
Readout Doubles The Functions		110
Clamp For Machining Metal Balls		148
Handy Hole Locating Method	June,	149
A Guide To Digital Position Readouts	Aug.,	98
Measuring System Can Generate NC Tape		124
Roller Burnishing Eliminates Secondary Operation		127
Setting Accurate Drill Depths		129
Take A Look At The Latest Tools For Modern Metalwork		91
Take A Look At The Latest Tools For Modern Metalworl	king Sept.,	96
Take A Look At The Latest Tools For Modern Metalworl		107
TONE A LOUK ALT HE LAKESK TOOLS FOR MORET MATELWAY	cing Sent	111

DRILLING (CONT'D)	
Conventional Machining Is Alive And WellOct.,	130
Vee-Block Drill JigOct.,	141
Machining Time Reduced 40 Percent	108
Adjustable Table Support	117
Milling Machine Has Simultaneous Five-Axis Contouring Capability Dec.,	78
Die Making Operations Go NC	85
Place Pour Service Children Characteristics of the Children Childr	
DUST CONTROL	
Exhausters Remove Welding Fumes Jan.,	120
Finished Parts Rust-Proofed Automatically July,	135
Dust-Collecting Workbenches Solve Problem Aug.,	123
How One Screw Machine Shop Achieved Mist-Free Air Oct.,	116
One Collector Captures Dust From 16 Stations Nov.,	111
ELECTRICAL DISCHARGE MACHINING	
Burning Power Is Earning PowerJan.,	114
It Takes \$10 Million To Produce Reactor Parts Feb.,	112
ELECTROCHEMICAL MACHINING	
It Takes \$10 Million To Produce Reactor Parts Feb.,	112
Control of the Contro	
EMPLOYEE TRAINING	
It Takes \$10 Million To Produce Reactor Parts Feb.,	112
And The Walls Come Tumbling Down	122
Why Do Supervisory Training Courses Fail?	157
Draftsman's Conversion Angle	160
Add Carbides To Your Payroll June,	116
Handy Hole Locating Method	149
Let's Abandon Unilateral Tolerances July,	123 140
Ring Binder Improves Presentations July, The Shows Fact, Fun, Or Frustration Aug.,	106
The Psychology Of PlanningOct.,	121
The Psychology Of Change	101
The Psychology Of Change	101
EQUIPMENT DESIGNING	
Shop-Designed Gear Drives Down Costs Jan.,	101
Rotary Carrier Grinder Solves Problem	
Special Center Heads Stimulate Actuator Production Mar.,	126
Do You Know Your Press? Apr.,	132
Six-Station Dial Machine	154
Do You Know Your Press? May,	132
Adapter Doubles Production	156
Draftsman's Conversion Angle	160
What's New In Steady Rests At Oak Ridge June,	130
\$46 Filter Saves \$18,000 Machine June,	138
Fast Tapping June,	144
New Nozzle Makes Grinding Coolants Work July,	100
Production With Engineered ToolingJuly,	133
A Guide To Digital Position ReadoutsAug.,	98
Where Have The Handwheels Gone?	108

	EQUIPMENT DESIGNING ( CONT'D)		
	How One Screw Machine Shop Achieved Mist-Free Air O	oct	116
	Clean Air Key To Wire Stripping Operation O		128
	Building-Block Special Machine Reduces Boring Costs O		134
	The Two Faces Of Fluid Logic		49
,			
	EQUIPMENT MAINTENANCE		
	Plastic Plugs Improve Fixture Changeover		126
	Portable Drill Aids Maintenance A		158
	Flexible Automation		106
	A Guide To Digital Position Readouts		98
	Worn Socket-Head Capscrews Easily Removed O		142
	Tubing Flared Without Splitting N		116
	Adjustable Table SupportN		117
	Effect Of Dressing With Diamond Wheels D	ec.,	72
	Overhead Hoist Rotates Large Trunnion Fixture D	ec.,	90
	Hexagon Sleeve Made In The Shop D	ec.,	91
	Simplified Stud Driver D	ec.,	92
	FORMING		
	Custom-Built Parts For Safer Racers F	eb.,	102
	Pressbrake Dies From Round Bars F	'eb.,	137
	One Machine Does Work Of Four A	pr.,	146
	Tap And Tool Life Increased With Stainless Steel	lay,	147
	Die Bends Two Parts Per Stroke	lay,	158
	Will Your Forming Die Work?A	ug.,	78
	Take A Look At The Latest Tools For Modern Metalworking Se	ept.,	100
	Take A Look At The Latest Tools For Modern Metalworking S	Sept.,	121
	GAGING		
	Setting Accurate Drill Depths A	ug.,	129
	GEAR MACHINING		
	Shop-Designed Gear Drives Down Costs J.		100
	Sharpening Spur Cutters Or Helical Cutters With Low Helix Angles A		160
	Quality Gear Inspection		120
	Take A Look At The Latest Tools For Modern Metalworking S		117
	Take A Look At The Latest Tools For Modern Metalworking S	ept.,	124
	CRINDING		
	GRINDING Cutting-Tool Production Increased 70 Percent	an	116
	Finishing Time Cut In Half		118
	Abrasive Cutoff Machine Cuts Costs	-	122
	Custom-Built Parts For Safer Racers F		102
	It Takes \$10 Million To Produce Reactor Parts F		112
	Production Grinder Delivers High Productivity F		126
	Central Filtration For Precision Grinding		110
	Hold It! With Low-Melting-Point Alloys		114
	Rotary Carrier Grinder Solves Problem		124
		,	

GRINDING (CONT'D)	
The M-40's Tough But GrindableApr.,	122
High Speed Surface Grinder Increases Production	144
Multiple Work Holding Grinding FixtureApr.,	158
Sharpening Spur Cutters Or Helical Cutters With Low Helix Angles Apr.	160
Shaper And Grinder Fixture May,	159
Precision Grinder For Fiberglas Nose Cones June,	134
New Nozzle Makes Grinding Coolants Work July,	100
Take A Look At The Latest Tools For Modern Metalworking Sept.,	102
Take A Look At The Latest Tools For Modern Metalworking Sept.,	119
Take A Look At The Latest Tools For Modern Metalworking Sept.,	125
Take A Look At The Latest Tools For Modern Metalworking Sept.,	127
New Abrasive Masters Tool Steel Dec.,	61
Effect Of Dressing With Diamond Wheels Dec.,	72
The state of the s	
HSS TOOLING	
Cutting-Tool Production Increased 70 PercentJan.,	116
Less Tool Wear With CMC Stainless Feb.,	125
Look, Boss - No Long Chips Apr.,	119
The M-40's Tough But GrindableApr.,	122
Have You Tried Cryogenics? Aug.,	91
Add Carbides To Your Payroll Nov.,	96
HEAT TREATING	
Use The Right Alloy Steel Feb.,	105
Have You Tried Cryogenics? Aug.,	91
HONING	
A Hole Is More Than A Dimension May,	124
INSPECTION	
It Takes \$10 Million To Produce Reactor Parts Feb.,	112
The Tangible TangentFeb.,	120
A Hole Is More Than A Dimension May,	124
Lasers For Measurement And Control June,	104
Readout Doubles The FunctionsJune,	110
Quality Gear Inspection	120
Let's Abandon Unilateral Tolerances July,	123
Measuring System Can Generate NC Tape	124
Take A Look At The Latest Tools For Modern Metalworking Sept.,	
Hand Gages Speed Inspection Nov.,	109
The large Court of the Court of	
JIGS & FIXTURES	105
Small-Plant Equipment Modernization Jan.,	107
Plastic Plugs Improve Fixture ChangeoverJan.,	126
Hold It! With Low-Melting-Point Alloys	
Rotary Carrier Grinder Solves Problem	
Multiple Work Holding Grinding Fixture Apr.,	
Shaper And Grinder Fixture May,	159
Fast TappingJune,	144
Clamp For Machining Metal BallsJune, Efficient Clamping FixtureJune.	148 149

	JIGS & FIXTURES (CONT'D)	
	Continuity Indicator Assures Workpiece Location July,	138
	Power Clamping Components Increase ProductionAug.,	122
	Simple Locking Principle Has Many Uses Aug.,	129
	Vee-Block Drill Jig Oct.,	141
	Vise Extension Holds Large Work Nov.,	116
	Pipe Plug Helps In Machining Thin-Wall Tubes Dec.,	91
	LASER	
	Lasers For Measurement And ControlJune,	104
	LUBRICATION	
	Finished Parts Rust-Proofed Automatically July,	135
	How One Screw Machine Shop Achieved Mist-Free Air Oct.,	116
	Coated Taps Stand Up To Exotics Oct.,	129
	Cutting Oil Increases Production And Tool Life	112
	MACHINING CENTERS	
	Evolving The Right NC Computer Programming Jan.,	92
	NC Machining Center Is 8 Machines In One Apr.,	142
	Adapter Doubles Production May,	156
	Take A Look At The Latest Tools For Modern Metalworking Sept.,	91
	Take A Look At The Latest Tools For Modern Metalworking Sept.,	96
	Take A Look At The Latest Tools For Modern Metalworking Sept.,	111
	Take A Look At The Latest Tools For Modern Metalworking Sept.,	116
	Machining Time Reduced 40 PercentNov.,	108
	Milling Machine Has Simultaneous Five-Axis Contouring CapabilityDec.,	78
	Modules Combined Into Powerful NC Machining Center Dec.,	79
	Die Making Operations Go NCDec.,	85
	MATERIAL HANDLING	
	Air Casters Streamline Operations Mar.,	128
	Loading Pedestals Aid Big Turning Jobs June,	142
	Pallet Hook Balances In Two Directions Oct.,	140
•	Parts And Orders Where Are They? Nov.,	79
	Parts Transfer And Placement System Dec.,	79
	MATERIALS	
	Custom-Built Parts For Safer Racers Feb.,	102
	No Flaws In These Tungsten Welds	
	Machinable Carbide Cuts Production Cost	
	The M-40's Tough But GrindableApr.,	122
	Machining Titanium Alloys	139
	Black-Oxide Parts In-House	146
	Butterfly Valves Produced With Stainless Steel July,	132
	Add Carbides To Your PayrollOct.,	112
	Coated Taps Stand Up To ExoticsOct.,	129
	Teamwork Builds A Better Air Conditioner Oct.,	139
	New Abrasive Masters Tool Steel	61
	Effect Of Dressing With Diamond Wheels Dec.,	72

METAL CUTOFF	
Abrasive Cutoff Machine Cuts Costs Jan.,	122
It Takes \$10 Million To Produce Reactor Parts Feb.,	112
Ball Point Pen Tests Flame Cutting Machines Aug.,	128
Take A Look At The Latest Tools For Modern Metalworking Sept.,	
Cut-Off Machine Cuts Cost	113
Describe Presentate Allegia Turning Toles.	4
METALLIZING	
Add Carbides To Your Payroll Nov.,	96
A STATE OF THE PARTY OF THE PAR	
METALLURGY	
Use The Right Alloy Steel Feb.,	105
Metal Cutting TheoryJuly,	118
Butterfly Valves Produced With Stainless Steel July,	132
Have You Tried Cryogenics? Aug.,	91
The state of the s	
MILLING	
Cutting-Tool Production Increased 70 PercentJan.,	116
Multiple Shaft Machining Jan.,	128
Milling Benefits Derived From Tracer Feb.,	
Milling Costs Reduced	
The M-40's Tough But GrindableApr.,	
NC Machining Center Is 8 Machines In One Apr.,	
Add Carbides To Your Payroll May,	114
Adapter Doubles Production	156
\$46 Filter Saves \$18,000 Machine	138
Clamp For Machining Metal BallsJune,	148
Machining Time Slashed With Adaptive Control July,	130
End Mill Cutting Capacity IncreasedJuly,	131
NC or Tracing Without Gears Or Hydraulics July,	226
Have You Tried Cryogenics?Aug.,	
A Guide To Digital Position Readouts Aug., Power Clamping Components Increase Production Aug.,	
Take A Look At The Latest Tools For Modern Metalworking Sept.,	
Take A Look At The Latest Tools For Modern Metalworking Sept.,	
Take A Look At The Latest Tools For Modern Metalworking Sept.,	
Take A Look At The Latest Tools For Modern Metalworking Sept.,	
Add Carbides To Your Payroll	112
Conventional Machining Is Alive And Well	130
Add Carbides To Your Payroll Nov.,	
,Machining Time Reduced 40 Percent Nov.,	
Milling Machine Has Simultaneous Five-Axis Contouring Capability Dec.,	
Adaptive Control For Lathes Dec.,	80
Die Making Operations Go NC Dec.,	85
All Cannals System Cleans Fresh Faster And Barrey	
NUMERICAL CONTROL	
One Tape-Controlled Die Punches 38 Different Parts	82
Evolving The Right NC Computer Programming	92
It Takes \$10 Million To Produce Reactor Parts Feb.,	112
NC Lathe Price Barrier Smashed Apr.,	114
NC Machining Center Is 8 Machines In One Apr.,	142

>

NUMERICAL CONTROL (CONT'D)	
	122
	156
	110
	134
	142
	106
	130
The state of the s	133
	226
	124
6 -/	225
Parts And Orders Where Are They? Nov.,	79
Modules Combined Into Powerful NC Machining Center Dec.,	79
Adaptive Control For Lathes Dec.,	80
2,000-Ton NC Forging Facility Speeds Ingot Conversion Dec.,	81
Optimum Progressive Die Design With Aid Of Computer Dec.,	82
Optimum Flogressive Die Design with Aid Of Computer Beer,	-
PLANT LAYOUT	
	112
	116
Parts And Orders Where Are They? Nov.,	79
1 410 1114 01401	
PLANT MANAGEMENT	
	107 -
A Detached Look At Value Analysis Feb.,	98-
	120
	122
,,	106-
	123
	140
The Shows Fact, Fun, Or Frustration Aug.,	
Parts And Orders Where Are They? Nov.,	79
	101
The Two Faces Of Fluid Logic Dec.,	49
Effect Of Dressing With Diamond Wheels Dec.,	72
	121
POLISHING/FINISHING	
	116
	124
	146
	152
	120
	136
	123
	128
	129
	224
Roller Burnishing Improves The Finish Nov.,	84
Add Carbides To Your Payroll Dec.,	56

PRESSWORKING	
One Tape-Controlled Die Punches 38 Different Parts	82
Clamp Supports Save Time Feb.,	130
Pressbrake Dies From Round Bars Feb.,	137
Air Casters Streamline Operations	, 128
What Is Isostatic Pressing? Mar.	
Do You Know Your Press? Apr.,	
Fluidics Used To Protect DiesApr.,	
Notching Die For Angle IronApr.,	
Do You Know Your Press? May,	132
Die Bends Two Parts Per Stroke	158
Compression Molding Press For Toronado Valance Panels June,	
Invisible Radio-Wave Shield Protects Blind Operator June,	140
Will Your Forming Die Work? Aug.	
Have You Tried Cryogenics? Aug.	
Take A Look At The Latest Tools For Modern Metalworking Sept.	
Take A Look At The Latest Tools For Modern Metalworking Sept.	, 118
Take A Look At The Latest Tools For Modern Metalworking Sept.	
Little Parts From Big Sheets Grow Oct.,	
Dihedral Shear Table Oct.,	
Pressworking From A New Angle Including Tapping Nov.	
2,000-Ton NC Forging Facility Speeds Ingot Conversion	
Die Making Operations Go NC Dec.	
Warm-Heading Wear Problem Solved Dec.	
to Switch Bill Million To Proches Brazin's Parjey	
QUALITY CONTROL	
It Takes \$10 Million To Produce Reactor Parts Feb.	
A Hole Is More Than A Dimension	
Lasers For Measurement And Control June,	
Readout Doubles The Functions June,	
Quality Gear Inspection June,	
Flexible Automation July,	
Let's Abandon Unilateral Tolerances July,	
Measuring System Can Generate NC Tape Aug.	
Take A Look At The Latest Tools For Modern Metalworking Sept.	
Hand Gages Speed Inspection Nov.	, 109
SAFETY	
	120
Exhausters Remove Welding Fumes Jan.,	
Look, Boss - No Long Chips Apr. High Speed Surface Grinder Increases Production Apr.	
Invisible Radio-Wave Shield Protects Blind Operator June,	
One Collector Captures Dust From 16 Stations Nov.	
One Collector Captures Dust F rom to Stations	, 111
SAWING	
Add Carbides To Your Payroll Nov.	, 96
Cut-Off Machine Cuts Cost	•
No de la constante de la const	,
SCRAP HANDLING	
It Takes \$10 Million To Produce Reactor Parts	, 112

SCREW MACHINE TOOLING		
Less Tool Wear With CMC Stainless	Feb.,	125
Damage-Free Workpieces	Mar.,	133
Finishing And Threading 1018 Plague You?	Apr.,	116
Ultrasonics Clean Debris From Small Parts	May,	152
Coolant Feeding Drills Reduce Costs	May,	154
Take A Look At The Latest Tools For Modern Metalworking	Sept.,	104
How One Screw Machine Shop Achieved Mist-Free Air	Oct.,	116
Roller Burnishing Improves The Finish	Nov.,	84
Cutting Oil Increases Production And Tool Life	Nov.,	112
SM Stainless Steel Saves Machining Time	Dec.,	84
TAPPING		
Small-Plant Equipment Modernization	Jan.,	107
Finishing And Threading 1018 Plague You?	Apr.,	116
NC Machining Center Is 8 Machines In One	Apr.,	142
Tap And Tool Life Increased With Stainless Steel	May,	147
Adapter Doubles Production	May,	156
Fast Tapping	June,,	144
Coated Taps Stand Up To Exotics		129
Pressworking From A New Angle Including Tapping	Nov.,	90
Machining Time Reduced 40 Percent	Nov.,	108
TESTING		
It Takes \$10 Million To Produce Reactor Parts		112
Will Your Forming Die Work?	Aug.,	78
THREAD CUTTING		
Threaded Work Held With Nut		127
Finishing And Threading 1018 Plague You?	-	116
Look, Boss - No Long Chips		119
One Machine Does Work Of Four		146
New Die Head Design		227
Rear-Mounted Tracers Reduce Down Time	_	126
Coated Taps Stand Up To Exotics	Oct.,	129
TOOL DESIGN		
	Ton	126
		120
		132
Selection And Application Of Single-Point Metal-Cutting Tools		162
		100
Add Carbides To Your Payroll	July,	114
Metal Cutting Theory		118
End Mill Cutting Capacity Increased		131
Add Carbides To Your Payroll		112
and darbides to tour Payrott	Jet.,	112
TOOL SYSTEMS		
Selection And Application Of Single-Point Metal-Cutting Tools	Mav.	162
Little Parts From Big Sheets Grow		98

TRACING		
	Feb.	102
Milling Benefits Derived From Tracer		124
		123
Production With Engineered Tooling	July,	133
NC Or Tracing Without Gears Or Hydraulics		226
	July, Aug.,	126
Take A Look At The Latest Tools For Modern Metalworking	0 .	101
Take A Look At The Latest Tools for Modern Metalworking	Sept.,	101
TURNING		
Evolving The Right NC Computer Programming	Jan.,	92
Finishing Time Cut In Half	Jan.,	118
Tailstock Spindle Indicates Carriage Travel		134
NC Lathe Price Barrier Smashed	Apr.,	114
Lock, Boss - No Long Chips	Apr.,	119
The M-40's Tough But Grindable	Apr.	122
One Machine Does Work Of Four	Apr.	146
Add Carbides To Your Payroll	May.	114
Machining Titanium Alloys	May,	139
Coolant Feeding Drills Reduce Costs	May,	154
What's New In Steady Rests At Oak Ridge	June,	130
Loading Pedestals Aid Big Turning Jobs	June,	142
Flexible Automation	July,	106
Metal Cutting Theory	July,	118
Production With Engineered Tooling	July,	133
Versatile Expanding Arbor	1.	139
Add Carbides To Your Payroll		88
A Guide To Digital Position Readouts	_	98
Rear-Mounted Tracers Reduce Down Time	-	126
Take A Look At The Latest Tools For Modern Metalworking	-	90
Take A Look At The Latest Tools For Modern Metalworking		9
Take A Look At The Latest Tools For Modern Metalworking		
Take A Look At The Latest Tools For Modern Metalworking		114
Where Have The Handwheels Gone?		108
Roller Burnishing Improves The Finish	-	84
Add Carbides To Your Payroll		56
Adaptive Control For Lathes		80
Titanium Carbide Increases Tool Life		88
Pipe Plug Helps In Machining Thin-Wall Tubes		91
		,-
ULTRASONIC MACHINING	•	
Ultrasonics Clean Debris From Small Parts	May,	152
Ultrasonic Assembly		152
Ultrasonic System Cleans Parts Faster And Better		136
WELDING Parana Walding France	T	120
Exhausters Remove Welding Fumes		120
It Takes \$10 Million To Produce Reactor Parts		112
Welding Frame Reduces Clamping Operations	reb.	138

## 

## 1971 ARTICLE INDEX

A subject listing of articles published in MODERN MACHINE SHOP during the past year.

ADHESIVES, FASTENING		
Hydraulic Presses Increase Production	- Aug.	76
	-	
ALLOYS		. 11
Stainless Steel Filaments Have Many Uses	- Feb.	83
Want To Eliminate Heat Checked Dies?	- Apr.	112
Want To Eliminate Heat Checked Dies?  Maraging Stainless Steel Balls Eliminate Defects	— July	80
Alloy Steels Insure Fast Slotter Operation	- Nov.	77
Alloy Standardization Program Lowers Cost	- Dec.	73
BORING		
The Optical View Looks Good	- Jan.	65
Boring Machine Pavolutionizes Operation	- Feb	82
Deep Hole Drilling  Components Machined On Boring Mill	- Apr.	104
Components Machined On Boring Mill	- Apr.	116
Transfer Machine Ups Production	- May	114
Transfer Machine Ups Production — Radial Lip For Boring Tool	- May	119
Conventional Tools + Incentive = Precision Parts	- June	60
Stretching The Readout Dollar	- June	65
Unique Recesser Solves "Insoluble" Problem	- June	80
Bore Iron And Aluminum From Solid	— June	176
Concentrate On Tooling - It Pays	- Sept.	58
Precision Production Of Glass Bottle Moulds -	- Oct.	72
Recessing Tool Eliminates Manual Operation	- Oct.	84
Roller Burnishing Toughens Biceps Of Baker's "Muscle Machines"	- Oct.	90
BRAZING & SOLDERING		
Vise For Welding Small Parts	- Feb.	91
		,
BROACHING		
To Cut A Spiral Broach	— June	82
Wobble Out From Secondary Operations	— July	50
Metric Broaches Are The Answer	- Aug.	77
Machining Tool Steels	- Sept.	68
BURNISHING & POLISHING		
Tape Cradles Workpiece	- Feb.	91
Unique Recesser Solves "Insoluble" Problem -	— June	80
Roller Burnishing Toughens Biceps Of Baker's "Muscle Machines" -	- Oct.	90
CARBIDE TOOLING		
Japan's Cemented Carbide Industry	- Jan.	110
Find Your Own Speed and Feed	- Apr.	90
Savings Realized With Diamond Wheel	- May	112
Tooling Cost Analysis Made Easy	— July	70
Machinable Carbide Reduces Wear	- July	81
Cast Carbide Cutting Tools Race Through Steel	- Aug.	141

CARBIDE TOOLING (CONT'D)		
Concentrate On Tooling It Pays	- Sept.	58
Pin, Clamp And Qualified In One Holder Package	- Sept.	156
Solid Titanium Beats Tungsten Carbide Three-To-One	- Sept.	162
CERAMIC TOOLING		
Machining Tool Steels	- Sept.	68
CLAMPING/HOLDING		
Parts Handling Time Reduced	- Jan.	83
Vise For Welding Small Parts	- Feb.	91
Tape Cradles Workpiece	- Feb.	91
Spin The Part, Save The Oil, Solve The Problem	- Mar.	57
Make Your Own Second Operation Equipment	- Apr.	84
Nonlaminated Magnetic Chuck Parallels  Spheres Easily Slotted With Band Saw	- Apr.	122
Spheres Easily Slotted With Band Saw	- Apr.	123
Centralizing Device Saves Time	— May	118
Band Machine With Workholding Device	- June	77
Second-Operation Collet Stop	- June	.83
Internal Grinding-Workholding Methods	- Sept.	52
Automatic Centering Vise	- Sept.	88
EDM Electrode Holding Chuck	- Oct.	94
Split "T" Nut For Clamping Bolts	- Dec.	80
	-,	218
CUTTING FLUIDS		
Spin The Part, Save The Oil, Solve The Problem	- Mar.	57
Deep Hole Drilling	- Apr.	104
Internal Grinding - Coolants And Coolant Nozzles	- Oct	54
Coolant Oil Collected For Re-Use	- Nov.	79
Surface Integrity: Where Do You Draw The Line?	- Dec.	54
DEBURRING		
Burrs Succumb To Thermal Treatment	- Aug.	140
Carriera Danii and With Multi Chindle Daill Hands	- Oct.	86
Vibrate The Burrs Away ————————————————————————————————————	- Dec.	66
DRAWING & FORMING		
Nitrogen Die Springs Put On The Pressure	- Feb.	58
Expanders And Shrinkers Help Them Fly	- Feb.	64
51 Facts Every Die Designer Should Know	- Mar.	64
Smooth And Rifled Gun Barrels Cold Forged	- Dec.	60
	1	
DRILLING		
The Optical View Looks Good	- Jan.	65
Spin The Part, Save The Oil, Solve The Problem -	- Mar.	57
Make Your Own Second Operation Equipment	- Apr.	84
Maxi Results Squeezed From Mini Computers	- Apr.	94
Deep Hole Drilling	- Apr.	104
Retocled Upright Machine Adds Versatility	- Apr.	117
Transfer Machine Ups Production	- May	114
Drill Fixture Eliminates Loading And Unloading	- May	119
Conventional Tools + Incentive = Precision Parts	— June	60
Drill Holes 400 Percent Faster	- June	76

DRILLING (CONT'D)		
Modern Equipment Makes The Difference	- Aug.	62
Tan Wrench Extends Small Cutting Tools	_ Ana	80
Concentrate On Tooling - It Pays  Savings Realized With Multi-Spindle Drill Heads	- Sept.	58
Savings Realized With Multi-Spindle Drill Heads	- Oct.	86
Tips On Installing Drill Bushings	- Nov.	68
Bushing Removal From Blind Hole	- Nov.	83
Tool For Removing Tapped Dowel Pins	- Dec.	79
DIREMAND HOUSE AND DECEMBER OF THE PROPERTY OF	-	
DUST & MIST CONTROL		
And West Co. Day Alabama Daytialas Your Dashland	- July	78
	- Nov.	79
Orlande Manual M		W. Li
ELECTRICAL DISCHARGE MACHINING		
Machining Tool Steels	- Sept.	68
Machining Tool Steels  EDM Electrode Holding Chuck	- Oct.	94
Commenced Visite - Insuring - Produter barts -		
ELECTROCHEMICAL GRINDING		
Electrochemical Grinding WheelsDressable vs. Metal Bond	- Aug.	50
The state of the s		
ELECTROCHEMICAL MACHINING		
EDM Process To Profit From Custom Formed Graphite Electrodes -	- Aug.	144
Versatility Highlights Manufacturing Technology Center		48
EQUIPMENT DESIGN		
Why Are They Hand Scraped?	- Jan.	58
Magnetic Experimental Setup Saves Time	- Jan.	86
Roll Forming Is An Art	- Feb.	50
Nitrogen Die Springs Put On The Pressure	- Feb.	58
Electroforming A Precision Punch And Die	- Mar.	52
Spin The Part, Save The Oil, Solve The Problem	- Mar.	57
Special Machinery "Can" Be Delivered On Time	- Mar.	60
Make Your Second Operation Equipment	- Apr.	84
Electric Machine Tool Servos Make Their Move	— Mav	98
Electric Machine Tool Servos Make Their Move  To Cut A Spiral Broach	- June	82
Lathe Performance Designed In-Chatter Out	- Oct.	62
Alloy Steels Insure Fast Slotter Operation	- Nov.	77
A Better Ball-Bearing Housing	_ Dec.	78
EQUIPMENT MAINTENANCE		
Why Are They Hand Scraped?	_ Jan.	58
Portable Hand Press Packed With Practical Answers	_ Jan.	78
Bath Room Cup Holder Becomes A Shop Aid	_ Jan.	86
Tool Holder Stores And Protects	Jan.	88
Vise For Welding Small Parts	- Feb.	91
Special Machinery "Can" Be Delivered On Time	- Mar.	60
51 Facts Every Die Designer Should Know	- Mar.	64
Are Wet Or Dry Airborne Particles Your Problem?	— July	78
How Good Is Your Hydraulic Tank?	- Sept.	74
Bushing Removal From Blind Hole	- Nov.	83
Tool For Removing Tapped Dowel Pins	- Dec.	79
	States I	
	128	71

,

GAGING		
Maxi Results Squeezed From Mini Computers	- Apr.	94
Internal Grinding - The Role Of Machine Features	- Aug.	56
GEAR CUTTING & ROLLING		
Mar-Free Gears Produced On Screw Machine	- Feb.	90
Versatility Highlights Manufacturing Technology Center	- Dec.	48
GRINDING, HONING, LAPPING		DV .
Why Are They Hand Scraped?	- Jan.	58
The How, Why And Where Of Hog Mill Performance	- Feb.	72
51 Facts Every Die Designer Should Know  Grinding Time Reduced 50 Percent	- Mar.	64
Grinding Time Reduced 50 Percent	- Apr.	119
Nonlaminated Magnetic Chuck Parallels	- Apr.	122
Savings Realized With Diamond Wheel	- May	112
Internal Grinding - What Does It Offer?	- June	52
Conventional Tools + Incentive = Precision Parts	- June	60
Internal Grinding - Wheelheads & Wheels	- July	54
Electrochemical Grinding WheelsDressable vs. Metal Bond	- Aug.	50
Internal Grinding - The Role Of Machine Features	- Aug.	56
Does Sparkout Affect The Finish?	- Aug.	71
Huge Grinder For Large Sections Of Metal	- Aug.	78
Internal Grinding - Workholding Methods	- Sept.	52
Machining Tool Steels	- Sept.	68
End Mills Perfectly Ground With DNC Unit	- Sept.	158
Internal Grinding - Coolants And Coolant Nozzles	- Oct.	54
Roller Burnishing Toughens Biceps Of Baker's "Muscle Machines" —	- Oct.	90
Versatility Highlights Manufacturing Technology Center	- Dec	48
Surface Integrity: Where Do You Draw The Line?	- Dec	54
Cleaner And Sharper Cutting Tool Edges	- Dec.	75
Cleaner And Sharper Cutting 1001 Edges	Dec.	
HEAT TREATING & CHILLING		
Automatic Testing Saves Time, Improves Readouts	- Feb.	86
Want To Eliminate Heat Checked Dies?		112
want 10 Eliminate Heat Checked Dies?	- Apr.	112
HIGH SPEED STEEL TOOLING		
The How, Why And Where Of Hog Mill Performance	- Feb.	. 72
Small Shop Skills Still Spell Success	- Mar.	72
		70
Tooling Cost Analysis Made Easy	— July	
Concentrate On Tooling It Pays	- Sept.	58
Machining Tool Steels	- Sept.	68
TAIGDECHION & OHAT INV COMPON		
INSPECTION & QUALITY CONTROL	Pak	04
Automatic Testing Saves Time, Improves Readouts	- Feb.	86 87
Good Housekeeping Maintained With Cleaning Tanks	- Feb.	
Special Machinery "Can" Be Delivered On Time	- Mar.	60
Maxi Results Squeezed From Mini Computers	- Apr.	94
Peen Away Potential Failures	— May	80
Old Fashioned Formula Conquers Rejects	- May	113
Precision Blanking Cuts Costs	- May	116
Conventional Tools + Incentive = Precision Parts	- June	60
Stretching The Readout Dollar	- June	65
Regression Analysis Made Easy	- Aug.	66

INSPECTION & QUALITY CONTROL (CONT'D)		
How Round Is Round?	Sept.	72
Weight Standardization Problem Solved —	Sept.	81
Inspection At The Machine	Nov.	82
Surface Integrity: Where Do You Draw The Line?	Dec.	54
INVENTORY CONTROL		
Small Plant Floor Computer Controls Production	Sept.	152
JIGS & FIXTURES		
Make Your Own Second Operation Equipment	Apr.	84
Spheres Easily Slotted With Band Saw  Centralizing Device Saves Time	Apr.	123
Centralizing Device Saves Time	May	118
Drill Fixture Eliminates Loading And Unloading	May	119
Band Machine With Workholding Device Roll-Over Fixture Solves Special Problem Automatic Centering Vise	June	77
Roll-Over Fixture Solves Special Problem	June	78
Automatic Centering Vise	Sept.	88
Savings Realized With Multi-Spindle Drill Heads	Oct.	86
Tips On Installing Drill Bushings	Nov.	68
Split "T" Nut For Clamping Bolts	Dec.	80
MATERIAL HANDLING Cast Iron Chips - Away They Go Organize Production For Parts Not Processes		
Cast Iron Chips - Away They Go	June	174
Organize Production For Parts Not Processes	Nov.	50
Bar Stock Storage	Nov.	84
MATERIALS	- X - X - X	*
Roll Forming Is An Art	Feb.	50
Stainless Steel Filaments Have Many Uses	Feb.	83
Want To Eliminate Heat Checked Dies?	Apr.	112
Maraging Stainless Steel Balls Eliminate Defects	- July	80
Machinable Carbide Reduces Wear	July	81
SM Stainless Steel Supports "No Rejects" Policy	Sept.	83
METAL CUTOFF		
Improved Operations With Hot Shear Knives	Jan.	82
Tana Cradles Warknisse	Feb.	91
Drill Holes 400 Percent Faster	June	76
Cutoff With No Metallurgical Change	Dec.	74
METALLURGY		
Stainless Steel Filaments Have Many Uses	Feb.	83
Want To Eliminate Heat Checked Dies?	Apr.	112
Peen Away Potential Failures	— May	80
Surface Integrity: Where Do You Draw The Line?	Dec.	54
Cutoff With No Metallurgical Change	Dec.	74
MILLING		
The Optical View Looks Good	Jan.	65
Savings Realized With Digital Position Readout	Jan.	81
The How, Why And Where Of Hog Mill Performance	Feb.	72
Find Your Own Speed And Feed	Apr.	90
Maxi Results Squeezed From Mini Computers	Apr.	94

MILLING (CONT'D)		
Components Machined On Boring Mill	- Apr.	116
Peen Away Potential Failures	- May	80
How To Mill Internal And External Spherical Surfaces	- June	70
Tooling Cost Analysis Made Easy	- July	70
Madawa Essimment Malag The Difference	- Aug.	62
Job Instructions By Tape Recorder	- Aug.	80
Concentrate On Tooling It Pays  Machining Tool Steels  Weight Standardization Problem Solved	- Sept.	58
Machining Tool Steels	- Sept.	68
Weight Standardization Problem Solved	- Sept.	81
Savings Realized With Multi-Spindle Drill Heads	- Oct.	86
Savings Realized With Multi-Spindle Drill Heads  Measurement Device Reduces Cutting Time  Split "T" Nut For Clamping Bolts	- Nov.	76
Split "T" Nut For Clamping Bolts	- Dec.	80
NC MACHINES & CONTROLS		
The 44 Points Of Aggressive NC Justification	- Jan.	54
The Optical View Looks Good	- Jan.	65
Maxi Results Squeezed From Mini Computers	- Apr.	94
Digitizing The Natural Path To NC Tapes	- May	86
Electric Machine Tool Servos Make Their Move	- May	98
Stretching The Readout Dollar	- June	65
Stretching The Readout Dollar Drill Holes 400 Percent Faster	- June	76
Soft Wired Control Offers Flexibility Unlimited	- June	175
Modern Equipment Makes The Difference	- Ang	62
Numerically Controlled Production Lathes	- Aug	1'42
Small Plant Floor Computer Controls Production	- Sent	152
Organize Production For Parts Not Processes	- Nov	50
NC Facilitates Bit Production	- Nov.	72
Measurement Device Reduces Cutting Time	- Nov	76
Measurement Device Reduces Cutting Time  Versatility Highlights Manufacturing Technology Center	- Nov.	48
versattlity Highlights Manufacturing Technology Center	- Dec.	40
NC PROGRAMMING		
Maxi Results Squeezed From Mini Computers	- Apr.	94
Digitizing - The Natural Path To NC Tapes	- May	86
Next: Mechanizing The Software	- May	92
Organize Production For Parts Not Processes	- Nov.	50
NC Facilitates Bit Production	- Nov.	72
PEENING		
Peen Away Potential Failures	- May	80
PLANT LAYOUT		
Are Wet Or Dry Airborne Particles Your Problem?	— July	78
Organize Production For Parts Not Processes	- Nov.	50
Organize Production For Parts Not Processes	- Nov.	30
PLANT MANAGEMENT	30	
The 44 Points Of Aggressive NC Justification	— Jan.	54
The Psychology Of Creativity	- Jan.	71
The How, Why And Where Of Hog Mill Performance	- Feb.	72
Good Housekeeping Maintained With Cleaning Tanks	- Feb.	87
Special Machinery "Can" Be Delivered On Time	- Mar.	60
Small Shop Skills Still Spell Success	- Mar.	72
Shop Desk Suspended From Filing Cabinet	- Mar.	76

PLANT MANAGEMENT (CONT'D)		
How To Mill Internal And External Spherical Surfaces	- June	70
The Communications Gap	- July	66
Tooling Cost Analysis Made Fasy	- Tules	70
Modern Equipment Makes The Difference	- Aug.	62
Regression Analysis Made Easy	- Aug.	66
How Good Is Your Hydraulic Tank?	- Sept.	74
Efficient Material Usage For Circles	- Sept.	86
Small Plant Floor Computer Controls Production	- Sept.	152
OSHA: Now It's Your Move	- Oct.	78
Organize Production For Parts Not Processes		50
Making Small Parts What Type Machine?	- Nov.	61
Versatility Highlights Manufacturing Technology Center	- Dec.	48
		1
PRESSWORKING		
Portable Hand Press Packed With Practical Answers	- Jan.	78
Multiple-Function Press Made Possible By Stock Feed Equipment	- Jan.	80
Roll Forming Is An Art	- Feb.	50
Nitrogen Die Springs Put On The Pressure	- Feb.	58
Electroforming A Precision Punch And Die	- Mar.	52
51 Facts Every Die Designer Should Know	- Mar.	64
Brake Die Counters Springback	- Mar	78
Want To Eliminate Heat Checked Dies?  Precision Blanking Cuts Costs	- Apr	112
Precision Blanking Cuts Costs	— May	116
Maraging Stainless Steel Balls Eliminate Defects	Tuly	80
Machinable Carbide Reduces Wear	Tulse	81
Hydraulic Presses Increase Production	Aug	76
Improved Die Bushing Design	Aug.	81
Transfer Press Offers Flexibility	- Aug.	80
Smooth And Rifled Gun Barrels Cold Forged —	- Sept.	60
Smooth And Killed Gun Barrels Cold Forged	— Dec.	72
Stamping Ejection Problem Solved ————————————————————————————————————	— Dec.	
A Better Ball-Bearing Housing	— Dec.	78
DECE AD CIT		
RESEARCH Electroforming A Precision Punch And Die	1/	52
Electrolorming A Precision Punch And Die	— Mar.	
Peen Away Potential Failures		80
Next: Mechanizing The Software	— May	92
How To Mill Internal And External Spherical Surfaces		70
Tooling Cost Analysis Made Easy	— July	70
Electrochemical Grinding Wheels Dressable vs. Metal Bond		50
Does Sparkout Affect The Finish?	- Aug.	71
Lathe Performance Designed In - Chatter Out	- Oct.	62
Versatility Highlights Manufacturing Technology Center	— Dec.	48
SAFETY	Action Action	
Good Housekeeping Maintained With Cleaning Tanks	Feb.	87
OSHA: Now It's Your Move	— Oct.	78
SCRAP HANDLING		
Cast Iron Chips - Away They Go	— June	174

SCREW & AUTOMATIC MACHINING		
Mar-Free Gears Produced On Screw Machine	- Feb.	90
Make Your Second Operation Equipment	- Apr.	84
Mount The Shaving Roller In A Drill Stand	- Apr.	123
Old Fashioned Formula Conquers Rejects	- May	113
Wobble Out From Secondary Operations	— July	50
SM Stainless Steel Supports "No Rejects" Policy	- Sept.	83
Roller Burnishing Toughens Biceps Of Baker's "Muscle Machines" -	- Oct.	90
Making Small Parts What Type Machine?	- Nov.	61
Making Small Parts What Type Machine?  Alloy Steels Insure Fast Slotter Operation	- Nov.	77
STAMPING, BLANKING & BENDING		100
Multiple-Function Press Made Possible By Stock Feed Equipment	- Jan.	80
Roll Forming Is An Art  Nitrogen Die Springs Put On The Pressure	- Feb.	50
Nitrogen Die Springs Put On The Pressure	- Feb.	58
Electroforming Mates Ultra-Precision Punch And Die	- Mar.	52
51 Facts Every Die Designer Should Know	- Mar.	64
Brake Die Counters Springback Want To Eliminate Heat Checked Dies?	- Mar.	78
Want To Eliminate Heat Checked Dies?	- Apr.	112
Precision Blanking Cuts Costs	— May	116
Efficient Material Usage For Circles	- Sept.	86
11		
TAPPING & THREADING		
Make Your Second Operation Equipment	- Apr.	84
Transfer Machine Ups Production  Roll-Over Fixture Solves Special Problem	— May	114
Roll-Over Fixture Solves Special Problem	— June	78
Emergency Thread Cutting	— June	83
Savings Realized With Multi-Spindle Drill Heads  NC Facilitates Bit Production	- Oct,	86
NC Facilitates Bit Production	- Nov.	72
TESTING		
Automatic Testing Saves Time, Improves Readouts	- Feb.	86
Peen Away Potential Failures	- Mav	80
Lathe Performance Designed In - Chatter Out	- Oct.	62
TOOL & DIE DESIGN		
Nitrogen Die Springs Put On The Pressure	- Feb.	58
Electroforming Mates Ultra-Precision Punch And Die	- Mar.	52
51 Facts Every Die Designer Should Know	- Mar.	64
Small Shop Skills Still Spell Success	- Mar.	72
Diamond Chip Saves Time In Turning Carbide Dies	- Mar.	76
Brake Die Counters Springback	- Mar.	78
Want To Eliminate Heat Checked Dies?	- Apr.	112
Unique Recesser Solves "Insoluble" Problem	— June	80
Improved Die Bushing Design	- Aug.	81
Cleaner And Sharper Cutting Tool Edges	- Dec.	75
Cooling that carries cannot be a second to the second to t		38 13
TRACING		
Let's Trace It	- May	104
Precision Production Of Glass Bottle Moulds	- Oct.	72

TRAINING		
The Psychology Of Creativity	- Jan.	71
Shop Desk Suspended From Filing Cabinet	- Mar.	76
The Communications Con	- July	66
Tooling Cost Analysis Made Easy	- July	70
Regression Analysis Made Easy	- Aug.	66
Job Instructions By Tape Recorder	- Aug.	80
How Round Is Round?	- Sept.	72
Drawing Paper Holder	- Sept.	86
Drawing Paper Holder Savings Realized With Multi-Spindle Drill Heads	- Oct.	86
Tips On Installing Drill Bushings	- Nov.	68
TURNING		
Parts Handling Time Reduced -	- Jan.	83
Diamond Chip Saves Time In Turning Carbide Dies	- Mar.	76
Let's Trace It	- May	104
Conventional Tools + Incentive = Precision Parts		60
Stretching The Readout Dollar	- June	65
How To Mill Internal And External Spherical Surfaces	- June	70
Wally Oak Barrier Consultant Operations	Tanlan	50
Tooling Cost Analysis Made Fasy	- Turler	70
Modern Equipment Makes The Difference	- Aug.	62
Cast Carbide Cutting Tools Race Through Steel	- Aug.	141
Numerically Controlled Production Lathes	- Aug.	142
Concentrate On Tooling It Pays	- Sept.	58
Machining Tool Steels	- Sent.	68
Performance Designed In - Chatter Out	- Oct.	62
Precision Production Of Glass Bottle Moulds	- Oct.	. 72
Recessing Tool Eliminates Manual Operation	- Oct.	84
Roller Burnishing Toughens Biceps Of Baker's "Muscle Machines" -	- Oct.	90
Measurement Device Reduces Cutting Time		76
VIBRATORY FINISHING		
Vibratory Finishing Machine Saves Man-Hours	- Oct.	88
Vibrate The Burrs Away	- Dec.	66
WELDING		
Expanders And Shrinkers Help Them Fly	- Feb.	64
Expanders And Shrinkers Help Them Fly Vise For Welding Small Parts	- Feb.	91
Fully Automatic Welding For 95 Percent Of Industry Needs	- Feb.	158
Modern Equipment Makes The Difference	- Aug.	62